In-Vessel Composting of Wild Birds, Game Birds and Backyard Poultry to Prevent the Spread of Avian Influenza (H5N1)

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Greendrum Type 408
Mobile In-Vessel Composter

"Research has shown that Avian Influenza (AI) virus can be inactivated at 140ºF (60ºC) in 10 minutes (Lu et al. 2003)."

SUMMARY OF THE METHOD

Composting is the natural degradation of organic sources (such as poultry carcasses) by microorganisms. Windrow composting has been used in the United States to dispose of entire commercial poultry flocks infected with Avian Influenza (AI). However, windrow composting may not meet the needs of individuals responsible for disposing of backyard flocks, game birds and wild birds. In-vessel composting represents an alternative to windrow composting for small scale carcass disposal.

In-vessel composting is an enhanced composting process that takes place within a rotating drum. Like static pile composting, in-vessel composting has been used successfully in the United States and elsewhere to dispose of partial flock losses and routine daily mortality from commercial poultry operations. This method can also be used to dispose of carcasses of wild birds, game birds and non-commercial poultry affected by an outbreak of avian influenza.

Bacterial activity within the drum generates temperatures of up to 140ºF (60ºC) within 48 hours with ongoing temperatures averaging 145ºF (63ºC) (Flory 2002). Research has shown that the AI virus can be inactivated at 140ºF (60ºC) in 10 minutes (Lu et al. 2003).

ADVANTAGES

- Rapid temperature generation and virus inactivation.
- Biosecure: Infected carcasses are not removed from the farm site.
- Produces an end product that may be used as a soil amendment.
- Environmentally sound.
- Complete mixing of carbon and carcasses.
- Drum provides vector control.
- Portable and easily set up.

DISADVANTAGES

- Carbon material may need to be brought to the farm.
- Equipment needs to be purchased or leased prior to an outbreak.
- Requires 5 to 10 days of operation time per site.

PERMITTING CONSIDERATIONS

- In most cases, birds may be composted on the farm where they were raised and are generally exempt from permitting requirements.
- In cases where birds are brought from off site to a centralized location for composting, a permit may be needed.

METHODOLOGY

- Poultry carcasses and litter are loaded into the composter at a ratio of 1 part carcasses to 3 parts litter (Broom 2006).
  - Other carbon sources such as sawdust, peanut hulls, and wood shavings may be substituted for poultry litter.
  - In-vessel composters should be loaded to a minimum working capacity (approximately ½ full) to generate sufficient heat. When only a few birds are being composted, this volume can consist principally of litter or other carbon material.
- Once all carcasses and carbon material have been loaded into the drum, the unit should be started. Once started, the unit turns slowly, providing thorough mixing, aeration and physical breakdown of the carcasses.
- The optimum moisture content of the compost is 50%. Moisture can be estimated within 24 hours of starting the composter by squeezing a handful of compost. Material should hold together in a ball without dripping water.
  - Water may need to be added if the moisture content is estimated to be below 50%.
  - Additional dry carbon material may be added if there is excessive moisture.
- Internal drum temperatures should reach at least 130°F (54°C) within 48 hours. A long stem thermometer or internal temperature probe can be used to monitor the temperature of the compost.
  - Failure to reach adequate temperatures is usually due to improper moisture content.

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ADDING AND REMOVING MATERIAL

- Additional carcasses may be added daily to continuous feed composters (such as the pictured Greendrum 408). Daily capacity is dependent on the size of the unit.
- Compost may be removed from the finish end of the unit after 5 to 10 days as a batch or partially unloaded on a daily basis depending upon operational needs.
- Access to the compost should be controlled until virus isolation testing confirms that the AI virus has been inactivated.

UNIT DEMOBILIZATION

- Prior to moving the unit to another site, all compost should be removed and the unit thoroughly cleaned and disinfected.

LIST OF REFERENCES

Broom R. 2006. GREENDRUM In-Vessel Systems Poultry Mortality Composters. RKB Enterprises, Inc. Norfolk. Virginia.

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